

Claims

1. In a method for manufacturing a flat panel display device, a method for selectively removing material covering a structure in the device comprising locally applying an etchant on the material covering the structure.
2. The method of Claim 1 wherein the structure comprises a bond pad.
3. The method of Claim 1 wherein the structure comprises an alignment mark.
4. The method of Claim 1 wherein locally applying an etchant comprises providing a localized spray of wet etchant over the structure.
5. The method of Claim 1 wherein locally applying an etchant comprises applying said etchant along an elongated zone over a plurality of structures.
6. The method of Claim 5 wherein applying said etchant along an elongated zone comprises spraying a wet etchant from a nozzle while moving one of the nozzle and the device relative to the other.
7. The method of Claim 1 wherein the device includes a central active region and an outer region, and wherein the structure is located in the outer region.
8. In a method of making a field emission device having a central active display area and a peripheral area surrounding the active display area, a method of removing a layer of material covering a component located in the peripheral area comprising selectively directing an etchant on the layer of material covering the component in the peripheral area without directing etchant toward the active display area.
9. The method of Claim 8 wherein the component comprises a bond pad and the layer of material comprises a passivation layer.
10. The method of Claim 8 wherein the component comprises an alignment mark.
11. The method of Claim 8 wherein selectively directing an etchant comprises locally spraying etchant on the layer of material covering the component.

12. The method of Claim 8 wherein said central active display area comprises a high resolution area.
13. A method of making an FED, comprising: making a cathode assembly, making an anode assembly, and assembling said cathode and anode assemblies, wherein said step of making a cathode assembly includes the step of locally applying an etchant to uncover a structure in a peripheral of the cathode assembly.
14. The method of Claim 13 wherein said structure comprises an alignment mark.
15. The method of Claim 13 wherein said structure comprises a bond pad.
16. The method of Claim 13 wherein said step of locally applying an etchant comprises spraying a wet etchant on the structure without spraying the etchant elsewhere.
17. A method of making an FED, comprising: making a cathode assembly, making an anode assembly, and assembling said cathode and anode assemblies, wherein said step of making an anode assembly includes the step of locally applying an etchant to uncover a structure in a peripheral region of the cathode assembly.
18. The method of Claim 17 wherein said structure comprises an alignment mark.
19. The method of Claim 17 wherein said step of locally applying an etchant comprises spraying a wet etchant on the structure while limiting spraying of the etchant elsewhere.
20. A method of forming a cathode assembly of an FED, comprising:
providing a substrate having a central area and a peripheral area;
forming alignment marks on the peripheral area of the substrate;
forming an emitter electrode structure on the central area of the substrate;
forming a plurality of micropoints in groups on the emitter electrode structure;
depositing an insulating layer over the substrate, emitter electrode structure, and plurality of micropoints;
depositing a conductive layer over the insulating layer;
locally applying etchant on the alignment marks; and

selectively etching openings through the conductive and insulating layers to expose the micropoints, with walls defining the openings being spaced away from the micropoints.

21. The method of Claim 20 wherein selectively etching openings through the conductive and insulating layers comprises applying a layer of photoresist on said conductive layer, imaging said photoresist to define a pattern for said openings, developing the photoresist, and etching the pattern for the openings.

22. The method of Claim 21 further comprising the step of polishing the conductive layer after the step of depositing a conductive layer over the insulating layer.

23. The method of Claim 22 wherein said step of polishing comprises chemical-mechanical planarization.

24. The method of Claim 21 wherein said step of locally applying an etchant comprises spraying a wet etchant on the alignment marks without spraying the etchant elsewhere.

25. A method of forming a cathode assembly of a field emission device, comprising:
providing a substrate;
making alignment marks in a peripheral region of the substrate;
forming an emitter electrode structure on a central region of the substrate, said central region being substantially surrounded by the peripheral region;
forming a plurality of micropoints on the emitter electrode structure;
depositing an insulating layer over the substrate, emitter electrode structure, and plurality of micropoints;
depositing a first conductive layer over the insulating layer;
polishing the conductive layer;
selectively applying localized etchant on the alignment marks while inhibiting application of the etchant on the central region to clear the marks of material deposited thereon; and
etching openings through the conductive and insulating layers to expose the micropoints, with walls defining the openings being spaced away from the micropoints.

P A T E N T D A T A S E

26. The method of Claim 25 wherein said step of selectively applying a localized etchant comprises spraying a wet etchant on the alignment marks.
27. In a method for manufacturing a flat panel display having a central active display region and a peripheral region at least partly surrounding the active region, a process for removal of material covering a structure located in the peripheral region, comprising selectively spraying a wet etchant in localized fashion over the structure while limiting spraying of the etchant on the central active region, and thereafter rinsing residual etchant from the device.
28. The method of Claim 27 wherein the structure comprises a bond pad.
29. The method of Claim 27 wherein the structure comprises an alignment mark.
30. The method of Claim 27 wherein said step of spraying a wet etchant comprises spraying said etchant along an elongated zone over a plurality of structures.
31. The method of Claim 30 wherein said step of spraying said etchant along an elongated zone comprises spraying said etchant from a nozzle and moving one of said nozzle and said field emission display relative to the other.
32. The method of Claim 27 wherein said flat panel display comprises a field emission device.